

Marion Board of Health Proposed Regulations Requiring: Nitrogen Reducing Septic Systems for New Construction and Failed Systems at Time of Transfer:

Frequently Asked Questions

What is Nitrogen Pollution and Why is it Harmful?

Nitrogen pollution fuels the growth of algae: tiny plants that can bloom rapidly and fill the water making it brown. Clumps form at the surface and in the shallows and wash up at low tide, fouling our beaches. Along the shoreline, algae forms slimy mats of green on rocks, pilings, and tidal flats. Sometimes, algae can even stink like decay, but the effects of nitrogen pollution aren't just ugly. When algae blooms form, they block out sunlight from reaching eelgrass at the bottom. Young fish, crabs, and bay scallops rely on eelgrass as a nursery and without enough sunlight, eelgrass dies. And those species that depend on eelgrass begin to vanish, too. Algae growth also leads to less oxygen in the water. All of the Bay's species – from big fish to tiny clams – need oxygen to survive.

Are Marion's Coastal Waters Polluted with Nitrogen?

Yes. All of Marion's coastal waters - Aucoot Cove, Sippican Harbor, and the Weweantic River – are polluted with nitrogen. All of Marion's coastal waters fail to meet state water quality standards and are listed on the federal EPA's "Dirty waters" list as being polluted with too much nitrogen. New sources of nitrogen added to these waterways only adds to this problem.

Where does Nitrogen Pollution come from?

The largest source of nitrogen pollution to Marion's coastal waters is wastewater from individual homes' septic systems. Other smaller sources of Nitrogen include Wastewater Treatment Plant discharges, fertilizers (both lawn and agricultural) and acid rain.

How do we know that individual septic systems are the largest source?

Decades of state and federal study show that septic systems remain the largest source of nitrogen to southeastern Massachusetts coastal waters. Testing at the Massachusetts Alternative Septic System Test Center on Cape Cod has determined that conventional Title 5 septic systems remove only ~25% of nitrogen in wastewater.

It is well established that municipal wastewater treatment plants, on the other hand, can achieve a 93% reduction in nitrogen from wastewater. Marion's wastewater treatment facility is required to reduce nitrogen by 92%. Whenever possible, people should connect to sewer as this provides the greatest nitrogen reduction. Where this is not possible, using and maintaining a nitrogen reducing septic system can achieve greater than 50% reduction in nitrogen.

Shouldn't we pass a regulation to ban fertilizers?

Fertilizer is a source of nitrogen and is the only source we voluntarily add to the environment. Fertilizing yards should be minimized and avoided, particularly within 100 yards of the water. Effective organic fertilizers are available as a more environmentally friendly alternative, but still contain nitrogen.

However, fertilizers make up a very small percentage of the amount of nitrogen polluting coastal waters and state law does not allow local communities to regulate fertilizer.

What is the town doing to clean up our waters from existing sources?

The town is making a \$7 million plus public investment in the town's wastewater treatment facility to further reduce nitrogen pollution to Marion's waters, which includes lining 5-acre waste water lagoon number one and other upgrades to the plant itself. The Town approved funding at the May 2019 Town Meeting for a comprehensive wastewater management plan. An RFP was issued and the engineering firm, Weston Sampson, was hired to prepare the report and commenced work early this year.

This plan, when done, will provide a long-term road map for management of the Town's wastewater including, for example, identifying and prioritizing parts of Town to extend the sewer, recommending policies for septic and grinder pumps, and quantifying the capacity and potential for expansion of the existing Wastewater Treatment Plant. This report also will recommend solutions to reduce existing sources of nitrogen pollution to the town's estuaries.

Why should Marion act now to pass this regulation?

Today, Marion's coastal waters are polluted with too much nitrogen and fail to meet state water quality standards. Each time a new conventional Title 5 septic system is installed, more nitrogen pollution is added. With the significant investment the town is making in reducing pollution from the wastewater treatment facility and the comprehensive wastewater management plan, allowing new sources of nitrogen to go unabated threatens to undo that public investment.

Who does this regulation apply to?

This regulation applies to new home construction and those septic systems failing inspection at the time of real estate sale/transfer. This regulation **DOES NOT** apply to a properly functioning title 5 septic system.

How much do these systems cost?

There are several different nitrogen reducing septic systems on the market that can be used to comply with the regulation and the costs vary with the type of system. The most commonly used systems that meet the standard for this regulation have an average incremental cost of \$6,800 in excess of the cost of regular Title 5 septic and range in cost from \$4,750 to \$8,845 for a 3-4 bedroom home. These costs do not include the site specific installation costs which would be required of any septic installation.

What is new construction?

New construction is defined in the proposed regulation as a new building requiring an occupancy permit or construction that increases the actual or design flow of wastewater to the existing system. New construction also includes the demolition and replacement of an existing building.

What percentage is a nitrogen reducing septic system to the cost of new construction in the town of Marion?

If we assume that it costs between \$200-300 per square foot to build a 2,200 square foot house in Marion and the site work (excavation of foundation, grading, and leach field) costs \$60,000 that results in a total construction cost of \$500,000-\$720,000. The additional investment for a nitrogen reducing septic system at an average cost of \$6,800 is just 1-2% of that new home.

Do nitrogen reducing septic systems work on a seasonal basis?

Yes. After the first season of operation, it only takes 1 – 2 weeks for a system to begin reducing nitrogen after a home is reoccupied for the summer.

How often do nitrogen reducing systems have to be sampled and what does it cost?

The frequency of sampling will depend on the system selected. At a minimum, the proposed regulation requires that the system be sampled twice a year for the first two years. After a showing of compliance with this regulation, the Board of Health may approve a reduction in sampling to once a year.

The average total annual cost for operation, monitoring and sampling is approximately \$650.

What is a failed system?

A failed system is defined by state regulation and includes an existing system which fails to protect public health and safety or the environment.

How fast is the technology changing?

The good news is the technology is improving but not so fast as to make the systems available today obsolete. Many of the systems have been around for more than twenty years.

Is there anything I can do to reduce my nitrogen in my wastewater?

Not really. The majority of the nitrogen comes from our urine in the form of ammonia. While conventional title 5 septic systems are not designed to remove nitrogen, Homeowners with conventional title 5 septic systems should regularly maintain their systems and have them pumped and inspected every other year. More frequent pumping of a conventional Title 5 system does not remove additional nitrogen.

Has this regulation been passed in other towns?

Yes. The towns of Wareham (2013) and Tisbury (2016) have passed very similar regulations. Many other Boards of Health around Buzzards Bay also are considering passing this regulation.

Where can I go learn more about nitrogen reducing septic systems?

The Massachusetts Alternative Septic System Test Center is an amazing resource and monitors more than 2,500 nitrogen reducing systems throughout southeastern Massachusetts and Cape Cod. Information and performance data collected from these systems is available on line at <https://www.barnstablecountyhealth.org/programs-and-services/massachusetts-alternative-septic-system-test-center>.